

CLAIMS

1. A first network node comprising:
one or more ports for connection to a network
which comprises, in addition to the first network node,
5 one or more other nodes, wherein the nodes of the
network are interconnected by one or more links, and
the network satisfies at least one of the following
conditions (A) and (B):
 - (A) in case of failure, traffic can be
10 switched from one link to one or more other links,
and when traffic is switched traffic can be
squelched to prevent misconnection;
 - (B) data on each link are transmitted in data
15 buckets, each data bucket being re-transmitted at
regular intervals of time, each data bucket, when
re-transmitted, being dropped on the same
predetermined one or more nodes from the network;
storage for storing first data, wherein for data
received from the one or more ports and/or transmitted
20 on the one or more ports, the first data identifies at
least one of said nodes on which the data is added to
the network, and/or at least one of said nodes on which
the data is dropped from the network;
means for generating the first data in said
25 storage,
wherein the means for generating the first data
comprises circuitry which, besides generating the first
data, is also to perform real time processing to
accomplish communication of the first network node with
30 the one or more other nodes over said network.

2. The first network node of Claim 1 wherein:
the network satisfies the condition (A); and
the first data is for performing squelching to
5 prevent misconnection.

3. The first network node of Claim 1 wherein:
the network satisfies the condition (B); and
for each data bucket, the first data identifies at
10 least one of said nodes on which the data bucket is
added to the network, and/or at least one of said nodes
on which the data bucket is dropped from the network.

4. The first network node of Claim 1 wherein the
15 network comprises a bidirectional line switched ring in
which each link is:

(1) a SONET or SDH link, or
(2) an electrical link such that a transport
signal on the link has the format of a SONET STS or an
20 SDH STM, or
(3) a series of one or more links (1) or (2)
interconnected by one or more regenerators;
wherein each data bucket comprises an STS, a SONET
VT, an STM, or an SDH VC.

25

5. The first network node of Claim 1 wherein the
means comprises means for requesting, from said one or
more nodes other than the first network node, second
data indicating which data are added or dropped on said

one or more nodes, said second data being used to generate the first data.

6. The first network node of Claim 1 in
5 combination with said one or more other nodes and said one or more links.

7. A first network node comprising:
10 a cabinet;
circuitry in the cabinet, the circuitry being for communicating with one or more other nodes over a network, wherein the nodes of the network are interconnected by one or more links, and the network satisfies at least one of the following conditions (A)
15 and (B):

(A) in case of failure, traffic can be switched from one link to one or more other links, and when traffic is switched traffic can be squelched to prevent misconnection;
20 (B) data on each link are transmitted in data buckets, each data bucket being re-transmitted at regular intervals of time, each data bucket, when re-transmitted, being dropped on the same predetermined one or more nodes from the network;
25 wherein the circuitry in said cabinet is also for generating first data, wherein for data received from the one or more ports and/or transmitted on the one or more ports, the first data identifies at least one of said nodes on which the data is added to the network,

and/or at least one of said nodes on which the data is dropped from the network; and

wherein the first data is to be generated by the circuitry in the cabinet and not by any circuitry

5 outside the cabinet.

8. A method for operating a network comprising a plurality of nodes that are interconnected by one or more links, wherein the network satisfies at least one 10 of the following conditions (A) and (B):

(A) in case of failure, traffic can be switched from one link to one or more other links, and when traffic is switched traffic can be squelched to prevent misconnection;

15 (B) data on each link are transmitted in data buckets, each data bucket being re-transmitted at regular intervals of time, each data bucket, when re-transmitted, being dropped on the same predetermined one or more nodes from the network;

20 the method comprising:

each of said nodes requesting, from one or more of the other nodes, information indicating which data are added or dropped on said one or more other nodes;

each node D of said nodes using the information 25 received from one or more other nodes and generating first data for the node D, wherein for data received from the network and/or transmitted to the network by the node D, the first data for the node D identifies at least one of said nodes on which the data is added to

the network, and/or at least one of said nodes on which the data is dropped from the network.

9. A first network node comprising:

5 one or more ports for connection to a network which comprises, in addition to the first network node, one or more other nodes, wherein the nodes of the network are interconnected by a plurality of links, and wherein, in case of failure, traffic which is to be
10 transmitted through a link not attached to the first network node can be transmitted instead through the first network node;

means for generation of format information which indicates format of data on one or more links not
15 attached to the first network node, wherein the format information is to be used by the first network node in case of failure to process traffic transmitted through the first network node instead of one or more links not attached to the first network node,

20 wherein the format information is generated before the failure occurs.

10. The first network node of Claim 9 wherein the network is a synchronous time division multiplexing
25 network.

11. The first network node of Claim 9 wherein the network comprises a bidirectional line switched ring in which each link is:

30 (1) a SONET or SDH link, or

(2) an electrical link such that a transport signal on the link has the format of a SONET STS or an SDH STM, or

5 (3) a series of one or more links (1) or (2) interconnected by one or more regenerators;

wherein said format information comprises a type of an STS or an STM.

12. The first network node of Claim 9 wherein the
10 generation means comprises means for requesting, from said one or more nodes other than the first network node, format information indicating format of data on one or more links attached to said one or more nodes other than the first network node.

15

13. The first network node of Claim 9 in combination with said one or more other nodes and said plurality of links.

20 14. A method for operating a network comprising a plurality of nodes that are interconnected by a plurality of links, the method comprising:

if a failure occurs, re-directing traffic such that traffic which is to be transmitted through a link
25 not attached to a node can be transmitted instead through the node:

before the failure occurs, each node generating format information which indicates format of data on one or more links not attached to the node, wherein the
30 format information is to be used by the node in case of

failure to process traffic transmitted through the node instead of one or more links not attached to the node.

15. The method of Claim 14 wherein the network is
5 a synchronous time division multiplexing network.

16. The method of Claim 14 wherein the network comprises a bidirectional line switched ring in which each link is:

10 (1) a SONET or SDH link, or
(2) an electrical link such that a transport signal on the link has the format of a SONET STS or an SDH STM, or
(3) a series of one or more links (1) or (2)
15 interconnected by one or more regenerators,
wherein said format information comprises a type of an STS or an STM.

17. The method of Claim 14 wherein generating the
20 format information comprises each node requesting from one or more other nodes format information indicating format of data on one or more links attached to said other nodes.